

Remarks/Arguments

Reconsideration and allowance of this application are respectfully requested.

The undersigned appreciates the cooperation of Examiner Savage in listing the English translation of the International Preliminary Exam Report on Form PTO-1449. However, the Examiner lists the International Preliminary Examination Report for PCT/JP2005/00510, which does not correspond to this application. Listed on the attached Form PTO-1449 is the International Preliminary Examination Report for PCT/JP2005/005100, which does correspond to this application and was filed with this application originally.

Claim 9 stands rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claim 9 has been amended to obviate this rejection.

Claims 1-13 stand provisionally rejected based on nonstatutory obviousness-type double patenting. This provisional rejection will be addressed once the claims of co-pending Application No. 11/565,771 have been patented.

Claims 1, 2, 5, 6 and 9 stand rejected as anticipated by U.S. Patent 4,996,114 to Darrow (the '114 Darrow Patent). The subject matter of claim 2 has been incorporated into claim 1 and the subject matter of claim 6 has been incorporated into claim 5. Furthermore, each of claims 1 and 5 has been amended to recite that the titanium carbide (TiC) particles repel molten aluminum alloy. Furthermore, claim 1 has been amended to recite a machine part for a casting machine, rather than material for machine parts for use in a casting machine. As amended, claims 1, 2, and 9 obviate this rejection.

The '114 Darrow Patent relates to an abrasion-resistant coating. Nowhere in this reference is there any suggestion in applying the abrasion-resistant coating to a machine part for

a casting machine as in claim 1 or a molten aluminum alloy-contact member for a casting machine as in claim 5. Furthermore, nowhere in '114 Darrow Patent is there any suggestion that the TiC particles repel molten aluminum alloy so that the steel base can be prevented from being wetted by the molten aluminum. Therefore, claims 1, 5 and 9 as amended are not anticipated by the '114 Darrow Patent.

The Office Action suggests that the limitation that the material is for machine parts for use in a casting machine are drawn to an intended use. The claims have been amended to obviate this rejection. Specifically, claim 1 is now directed to a machine part for a casting machine and claim 5 is directed to a molten aluminum alloy-contact member for a casting machine. Thus, claims 1 and 5 are no longer directed to an intended use.

Claims 1, 5 and 9 stand rejected as anticipated by JP '303. It is respectfully suggested that this rejection is in error.

JP '303 is directed to a titanium carbide cermet scraping tool formed as a nitrided layer on a steel substrate. A cermet of titanium carbide bonded with nickel-molybdenum alloy is dispersed on a steel substrate and heated in the presence of nitrogen. As a result, the concentration of titanium nitride decreases with depth in the layer. Attached to the Information Disclosure Statement filed herewith is the complete copy of the Japanese document. Unfortunately, the undersigned and Applicant are not aware of an existing translation. However, Applicant has carefully reviewed this document in its original Japanese language and reports as follows. The document is directed to a method of nitriding a cermet cutting tool in which nitrogen is diffused into the surface of the tool. The cutting tool is made of cermet material, i.e. a nickel-molybdenum alloy. However, nowhere in this reference is there any suggestion that

titanium nitride particles are bonded to the surface of the nickel alloy layer. Instead, in JP '303, the titanium carbide is contained in a metallic matrix which forms a body of the cutting tool.

Therefore, claims 1, 5 and 9 are not anticipated by JP '303.

Claims 10 and 12 stand rejected as being unpatentable over the '114 Darrow Patent. It is respectfully suggested that this rejection is in error.

Claims 10 and 12 are directed to a method of producing a molten aluminum alloy-contact member for a casting machine. The member is formed by bonding TiC particles to the surface of a nickel alloy layer. The present inventor has determined that the TiC particles repel molten aluminum alloy, making the method particularly suitable for forming casting machine members that contact the molten aluminum alloy. As noted above, nowhere in the '114 Darrow Patent is there any suggestion of producing a member for a casting machine which comes in contact with a molten aluminum alloy. Nowhere in the '114 Darrow Patent is there any suggestion that the TiC particles repel molten aluminum alloy. Therefore, the '114 Darrow Patent does not render obvious claims 10 and 12 of this application.

Claims 10 and 12 are also rejected as obvious over JP '303.

As noted above, JP '303 does not teach or suggest forming TiC particles on the surface of a nickel alloy layer. Furthermore, this document does not teach or suggest that such TiC particles repel molten aluminum alloy. Therefore, JP '303 does not render obvious claims 10 and 12 of this application.

Claims 1-3, 5-7 and 9-12 stand rejected as obvious over JP 08-229657 to Nakayama, et al. in view of JP 2001-300711 to Negishi. Claims 2 and 6 have been cancelled and their

limitations have been included in claims 1 and 5, respectively. Claims 1, 3, 5, 7 and 9-12 are not obvious over the combination of Nakayama, et al. and Negishi.

Nakayama, et al. is directed to a member for casting and its production. Paragraph 10 of Nakayama, et al. discloses that the member has a nickel alloy layer formed on the surface of the substrate thereof. Although the nickel alloy contains carbide particles, absolutely no suggestion exists in this document that the carbide particles are bonded on the surface of the nickel alloy layer. Furthermore, absolutely no suggestions exist in this patent that TiC particles bonded to the surface of a nickel alloy layer can repel molten aluminum alloy.

Negishi does not compensate for the deficiencies of Nakayama, et al. Negishi relates to a die for a casting machine in which a ceramic film is coated on a surface in contact with molten metal. Nowhere in this reference is there any suggestion that titanium carbide particles should be bonded to the surface of a nickel alloy layer. Instead, this document teaches the use of PVD or CVD to form a membrane of titanium carbide. Furthermore, nowhere in this document is there any suggestion that TiC particles embedded in the surface of a nickel layer would repel molten aluminum alloy.

For these reasons, the combination of Nakayama, et al. and Negishi do not render obvious claims 1, 5 and 10. Claims 3 and 9, dependent on claim 1, claims 7 and 9, dependent on claim 5, and claims 11 and 12, dependent on claim 10, are patentable for the reasons discussed above with respect to claims 1, 5 and 10. Furthermore, these claims include additional limitations which further distinguish from the cited references.

The Office Action indicates that claims 4, 8 and 13 stand rejected as anticipated by Nakayama, et al. in view of Negishi, further in view of JP 2001-342530 to Honma, et al. In view

of the combination of documents cited, it is believed that this should be an obviousness rejection rather than an anticipation rejection. In any case, claims 4, 8 and 13 are patentable over these references.

Claims 4, 8 and 13 are dependent upon claims 1, 5 and 10, respectively. As noted above, the combination of Nakayama, et al. and Negishi do not render obvious claims 1, 5 and 10.

Honma, et al. does not compensate for the deficiencies of Nakayama, et al. and Negishi. Honma, et al. relates to a corrosion and abrasion resistant nickel alloy. The document describes a Ni-B-Si-Mo alloy. Also, carbon is included as an additive. No suggestion exists in this document that TiC particles should be bonded to the surface of a nickel alloy, or that such particles would repel molten aluminum alloy.

Therefore, claims 4, 8 and 13 are patentable over the combination of Nakayama, et al., Negishi, and Honma, et al.


New independent claim 14 is added with this amendment. Claim 14 is directed to a method of casting an article by flowing molten aluminum into a casting machine wherein at least a part of the casting machine in contact with the molten aluminum comprises a steel base a Ni alloy and TiC particles bonded to the surface of the Ni alloy, wherein the TiC particles are partly exposed on the surface of the Ni alloy and repel molten aluminum alloy. For the reasons discussed above, none of the prior art cited against the claims taken individually or in combination teach or suggest this method of casting.

In view of the above, this application is in condition for allowance, and such a Notice is respectfully solicited.

Please charge any shortage in the fees or credit any overpayment to Deposit Account No.
50-3266.

Respectfully submitted,

DLA PIPER LLP US

A handwritten signature in black ink, appearing to read 'Dale S. Lazar', is written over a horizontal line.

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